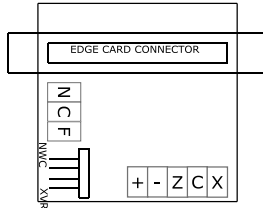# TSMSC

Tortoise^{TM} Switch Controller

For use with Circuitron Tortoise^{TM} Switch Machine

Introduction to the TSMSC

The TSMSC is a direct pluggable switch control module for Circuitron Tortoise^{TM} switch machines. A pair of wires provides control and indication of switch position for simplified local/remote switch control and feedback.

Installing the TSMSC

The Tortoise terminal strip is plugged directly into the TSMSC card-edge connector for simple installation. A Tortoise can be plugged into the TSMSC in either orientation.

TSMSC wiring is required prior to mounting the module to the Tortoise. Signalogic Systems recommends a good quality 12VDC accessory power supply and 18-24 AWG solid wire for all devices including the TSMSC. Solid wire telephone and network cabling is a cost effective solution. Ensure that track power and the 12VDC power are off during installation and check wiring prior to turning power back on.

A three terminal connector is provided for turnouts that require frog power switching:

- N   NEAR Connects to 'COMMON' when Tortoise throw-bar moves near to terminal block.
- C   COMMON
- F   FAR: Connects to 'COMMON' when Tortoise throw-bar moves far from terminal block.

See Figure 1 on the next page.

FOR TURNOUTS REQUIRING FROG POWER ROUTING, THE THREE POSITION TERMINAL BLOCK PROVIDES ACCESS TO ONE OF THE BUILT-IN TORTOISE CONTACTS.
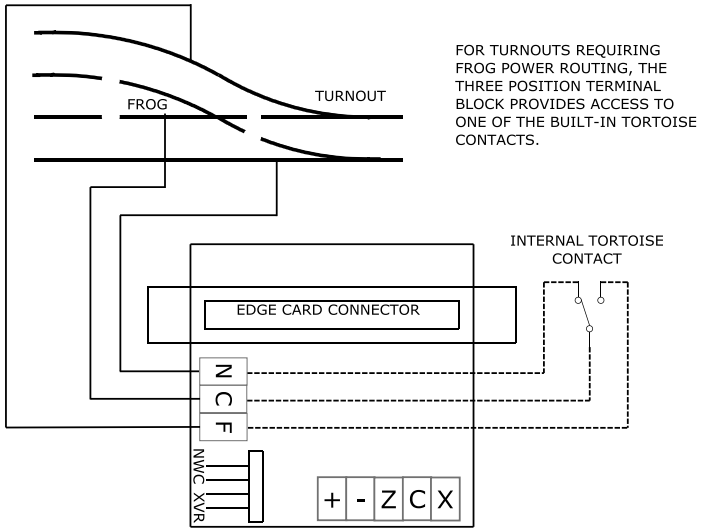
Figure 1

The TSMSC has a five pin terminal for powering and interfacing the TSMSC:

- + 12VDC positive power input
- - GND / negative power input
- Z Switch Throw Request
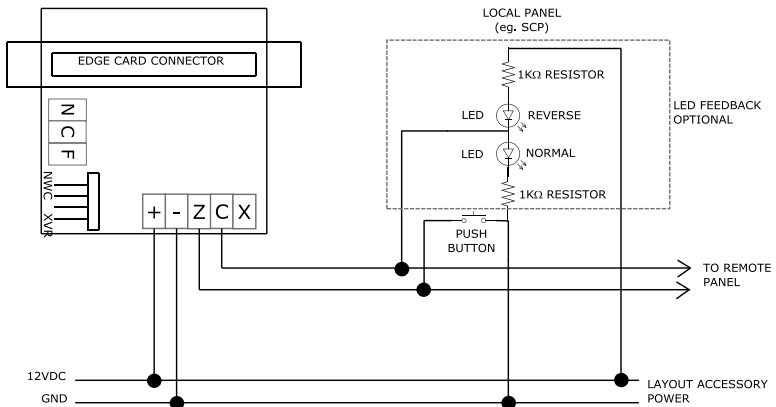- C Switch Position Indication (Correspondence)
- X Crossover Link

Figure 2

Switch Control

Local or Remote Control

Switch control is achieved with a single wire run from the TSMSC 'Z' terminal to the control location. To initiate switch throwing, momentarily connect the 'Z' terminal to the '–' (GND) terminal or any other convenient access to the accessory power supply GND. This can be via a pushbutton or transistor output. See Figure 2. Multiple pushbutton/transistor controls may be used allowing control of the switch from multiple locations. Each time the control is activated, the switch will be thrown to the opposite position.

Switch Indication

The position of the switch or full crossover is provided by the C terminal. The C terminal will output the following states according to switch position:

- 12V   Switch Normal
- 0V   Switch Reverse
- Open   Switch in neither position

Wire the LEDs as shown in Figure 2. The 'C' indication terminal can support a maximum of two LED indication circuits.

If the TSMSC reports that the switch is in the normal position and it is in fact in the reverse position, install one of the provided jumpers between the NWC pins. This will force the TSMSC to report the opposite positions after the next power-up cycle.

Crossover Operation

The TSMSC can be connected to another TSMSC or TCSC to handle a full crossover with one control interface. To enable a crossover application, one module needs to be the master. The master will have the control and indication interface attached to it. The master module must also have one of the provided jumpers installed over the XOVER pins as shown below. A single wire connected between the master and slave TSMSC 'X' terminals will allow communications between the two modules as shown in Figure 3.
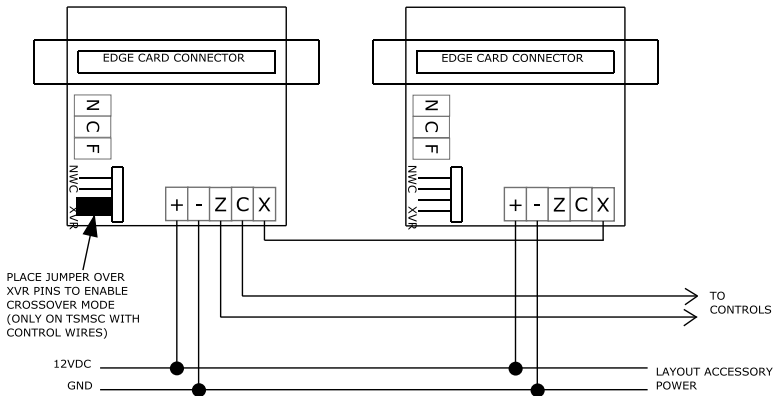
Figure 3

Both switches must be in the same position for the indication output to output a valid position. If a mismatch occurs between switch positions prior to a throw request, the master module will attempt to move its switch only to match the slave position.

SCP Fascia Control Panel

The Switch Control Panel (SCP) is available from Signalogic Systems as an easy to install and attractive fascia-mount operator switch control. A simple four-wire telephone cable can be used to connect the SCP to the TSMSC terminals.
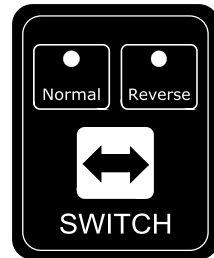
Maximum Specifications

Minimum Power Voltage	10 VDC
Maximum Power Voltage	16 VDC
Maximum Indication Current	25 mA

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